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UNITED STATES PATENT AND TRADEMARK OFFICE

Appellant: James William Otter
Serial No.: 09/923,554
Filed: August 7, 2001
Group Art Unit: 1773
Examiner: Jackson, Monique R.
Title: Ethylene Terpolymer Adhesive for Condensing Furnace Heat Exchanger
Laminate Material

MailStop Appeal Brief
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPEAL BRIEF

Dear Sir:

Subsequent to the filing of the Notice of Appeal on March 15, 2004, Appellant hereby submits its brief. The Commissioner is authorized to charge Deposit Account No. 50-1482 in the name of Carlson, Gaskey & Olds, P.C. for the \$330.00 Appeal Brief Fee. If any additional fees are due, the Commissioner is authorized to charge Deposit Account No. 50-1482 in the name of Carlson, Gaskey & Olds, P.C.

REAL PARTY IN INTEREST

The real party in interest is Carrier Corporation, the assignee of the entire right and interest in this Application.

RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences.

STATUS OF CLAIMS

Claims 1-14 remain in the application including independent claims 1 and 10. Claims 1-14 stand finally rejected under 103(a).

STATUS OF AMENDMENTS

All amendments have been entered.

SUMMARY OF THE INVENTION

The invention relates to a method for adhering a film to a heat transfer component and a heat transfer component including the film. As shown in Figure 2, a layer of ethylene terpolymer 48 including an organosilicone functional group is applied to a heat transfer component 28. A film 52 is applied to the layer of ethylene terpolymer 48, and the layer of ethylene terpolymer 48 is cured to adhere the film 52 to the heat transfer component 28 (paragraphs 19 and 20 of Appellant's specification). This basic method is set forth in Claims 1 and 10.

Claims 4 and 11 depend on Claims 1 and 10, respectively, and add that the layer of ethylene terpolymer 48 is cured by adding water to cross-link the organosilicone functional group of the ethylene terpolymer. Claim 5 depends on claim 4 and adds that the water is contained in the film 52. Claim 6 depends on claim 4 and adds that the water is applied to the heat transfer component 28. Claim 12 depends on claim 4 and adds that the water is contained in steam directed on the film 52 (paragraph 21 of Appellant's specification).

Claim 2 depends on claim 1 and adds that the layer of ethylene terpolymer 48 is applied with a rolling pressure (paragraph 19 of Appellant's specification). Claim 8 depends on claim 1 and adds that the film 52 is polar (paragraph 22 of Appellant's specification). Dependent Claim 13 adds that the layer of ethylene terpolymer 48 has a thickness between .5 mils and 5 mils. Dependent Claim 14 adds that the layer of ethylene terpolymer 48 has a thickness between 1 mil and 3 mils (paragraph 19 of Appellant's specification).

ISSUE

Is the final rejection of claims 1-14 under 35 U.S.C. 103(a) proper over the combined references of U.S. Patent No. 4,738,307 to Bentley in view of U.S. Patent No. 5,331,049 to Audett or the Prejean publication?

GROUPINGS OF CLAIMS

- A. The rejection of claims 1, 3, 4, 7 and 9-11 is contested.
- B. The rejection of claim 2 is separately contested, i.e. the rejection of claim 2 does not stand or fall with claims 1, 3, 4, 7 and 9-11.
- C. The rejection of claim 5 is separately contested, i.e. the rejection of claim 5 does not stand or fall with claims 1, 3, 4, 7 and 9-11.
- D. The rejection of claim 6 is separately contested, i.e. the rejection of claim 6 does not stand or fall with claims 1, 3, 4, 7 and 9-11.
- E. The rejection of claim 12 is separately contested, i.e. the rejection of claim 12 does not stand or fall with claims 1, 3, 4, 7 and 9-11.
- F. The rejection of claim 8 is separately contested, i.e. the rejection of claim 8 does not stand or fall with claims 1, 3, 4, 7 and 9-11.
- G. The rejection of claim 13 is separately contested, i.e. the rejection of claim 13 does not stand or fall with claims 1, 3, 4, 7 and 9-11.
- H. The rejection of claim 14 is separately contested, i.e. the rejection of claim 14 does not stand or fall with claims 1, 3, 4, 7 and 9-11.

PATENTABILITY ARGUMENTS

A. Claims 1, 3, 4, 7 and 9-11

Claims 1, 3, 4, 7 and 9-11 stand finally rejected under 35 U.S.C. 103(a) as being unpatentable over Bentley as modified with Audett or the Prejean publication. Claims 1 and 10 includes the features of a heat transfer component including a cured layer of ethylene terpolymer including an organosilicone functional group applied to the heat transfer component and a film that is adhered to the heat transfer component by the layer of ethylene terpolymer.

The Examiner argues that Bentley teaches a condensing heat exchanger including a polypropylene film adhered to a metal surface. The Examiner admits that Bentley does not teach employing an adhesive layer of ethylene terpolymer including an organosilicone functional group that is cured and relies on Audett or the Prejean publication to teach this feature.

First, Audett and the Prejean publication are non-analogous art to Appellant's invention and to Bentley. Second, there is no motivation or suggestion to modify Bentley with either Audett or the Prejean publication. Both of these arguments will be discussed in greater detail below.

"In order to rely on a reference as a basis for rejection of an Applicant's invention, the reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned." In re Oetiker, 977 F.2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992).

Audett and the Prejean publication are non-analogous art to Bentley or Appellant's invention. Neither Audett nor the Prejean publication are in Bentley or Appellant's field and are not reasonably pertinent to the particular problem that the Appellant has solved. Bentley is directed to a heat exchanger for a condensing furnace having a layer of a corrosion resistant polymer. Appellant's invention is directed towards a heat transfer component including a cured layer of ethylene terpolymer having an organosilicone functional group that is used to adhere a film to the heat transfer component. Audett is directed to a water curable hot melt adhesive composition, and the Prejean publication is directed to an ethylene terpolymer adhesive. Thus, Audett and the Prejean publication's field is related to adhesives while Bentley and Appellant's field concern heat transfer components. These fields are very different from each other.

Additionally, Audett and the Prejean publication are not reasonably pertinent to Appellant's particular problem. A reference is reasonably pertinent if, even though it may be in a different field of endeavor, it logically would have commended itself to an inventor's attention in considering his problem because of the matter with which it deals. In re Clay, 966 F. 2d 656, 659, 23 USPQ2d 1058, 1061 (Fed. Cir. 1992). As discussed above, Audett and the Prejean publication are clearly not within the field of heat transfer components, which is the subject to which Appellant's invention is directed. Further, Audett and the Prejean publication do not logically commend itself to the attention of an

inventor seeking to solve problems present in heat transfer components. This is because Audett deals with the problem of eliminating the need for additional silanol condensation catalysts which can migrate and worsen adhesion. The Prejean publication deals with the problem of providing heat and solvent resistance to an adhesive. This is far removed from Appellant's problem relating to adhering a film to a heat transfer component.

Moreover, even considering, arguendo, Audett and the Prejean publication to be analogous art, the mere fact that the prior art structure could be modified does not make such a modification obvious unless the prior art suggests the desirability of doing so. Bentley does not relate to the adhesion of a corrosion resistant polymer to a heat exchanger, but only relates to the use of the layer of corrosion resistant polymer such as polypropylene. Bentley does not disclose or suggest any material or adhesive for adhering the layer of corrosion resistant polymer to the heat exchanger. There simply is no teaching, suggestion, or incentive in any of the applied references that would have led one of ordinary skill in the art to modify the Bentley heat exchanger in the manner proposed by the Examiner.

The Examiner argues that it would have been obvious to one having ordinary skill in the art to provide the heat exchanger of Bentley with a "water-curable ethylene terpolymer hot melt adhesive comprising an organosilicone functional group as instantly claimed [as it] provides advantages over other adhesives." This is clearly a use of hindsight reconstruction. It is impermissible to engage in hindsight reconstruction of the claimed invention, using the Appellant's structure as a template and selecting elements from the references to fill the gaps. The references themselves must provide some teaching whereby the appellant's combination would have been obvious. In re Gorman, 933 F.2d 982, 986, 18USPQ2d 1885, 1888 (Fed. Cir. 1991). There simply is no suggestion in the references, or in the prior art as a whole, that suggests the desirability of making the combination.

Bentley is directed to heat exchanger including a layer of corrosion resistant polymer that is laminated on the heat exchanger to prevent corrosion. Bentley specifically addressed several problems relating to condensing heat exchangers. As set forth in Bentley, the problems with prior heat exchangers included: corrosion of the steel of the heat exchanger by a variety of acids, the high cost of forming condensing heat exchangers of thick steel to reduce corrosion, and the poor

performance of corrosion resistance coatings used on condensing heat exchangers to prevent corrosion (column 1, lines 34 to 58). The objective of Bentley is to provide a relative inexpensive corrosion resistant condensing heat exchanger (column 1, lines 61 to column 2, line 7). Bentley accomplished this by laminating a layer of corrosion resistant polypropylene film on the metal condensing heat exchanger. Audett teaches a water curable hot melt adhesive composition, and the Prejean publication teaches an adhesive of ethylene terpolymer.

The Examiner seeks to modify the heat exchanger of Bentley to include the adhesive of either Audett or the Prejean publication. Assuming the Examiner is arguing that the corrosion resistant polymer adhered on the condensing heat exchanger of Bentley is further modified to employ an adhesive of ethylene terpolymer including an organosilicone functional group, there would be no reason to modify Bentley to include an adhesive of ethylene terpolymer including an organosilicone functional group. Bentley already employs an adhesive to adhere the corrosion resistant polymer to the heat exchanger. To add an adhesive would unnecessarily increase costs.

There is nothing in Bentley that would have led one of ordinary skill in the art to believe that Bentley's adhesive for attaching the corrosion resistant polymer film to the heat exchanger was in any way deficient for Bentley's purposes or was in need of modification. One of ordinary skill in the art would have found no reason, suggestion, or incentive for attempting to combine these references other than through the luxury of hindsight accorded one who first viewed Appellant's disclosure. This is not a proper basis for a rejection under 35 U.S.C. 103.

For the many reasons set forth above, the rejection of claims 1, 3, 4, 7 and 9-11 under 35 U.S.C. 103(a) is improper and must be withdrawn.

B. Claim 2

Claim 2 stands finally rejected under 35 U.S.C. 103(a) as being unpatentable over Bentley as modified with either Audett or the Prejean publication. For the reasons set forth above in Section A, Audett and the Prejean publication are non-analogous art and there is no suggestion or motivation to modify Bentley with the teachings of Audett and the Prejean publication.

Claim 2 includes the step of applying a rolling pressure to apply the layer of ethylene

terpolymer. None of the references teach the step of applying a rolling pressure. Bentley does not teach method including a step of applying an adhesive to the heat exchanger with a rolling pressure. Audett and the Prejean also do not teach the step of applying an adhesive with a rolling pressure. Thus, none of the references teach the step of applying a rolling pressure to apply an adhesive, and therefore the combination of the references does not teach claim 2.

The Examiner also argues that applying a rolling pressure is an obvious and conventional method of adhesively laminating two substrates. However, Appellant is not claiming that the film is laminated to the adhesive with a rolling pressure. Instead, Appellant is claiming that the adhesive is applied with a rolling pressure. None of the references teach the step of applying an adhesive with a rolling pressure, and therefore the combination of the references does not teach, suggest or disclose the claimed invention.

The references do not disclose, suggest, or teach the claimed features. Thus, the rejection under 35 U.S.C. 103 is improper and must be withdrawn.

C. Claim 5

Claim 5 stands finally rejected under 35 U.S.C. 103(a) as being unpatentable over Bentley as modified with either Audett or the Prejean publication. For the reasons set forth above in Section A, Audett and the Prejean publication are non-analogous art and there is no suggestion or motivation to modify Bentley with the teachings of Audett and the Prejean publication.

Claim 5 includes the step of curing the layer of ethylene terpolymer with water contained in the film to cross-link the organosilicone functional groups. None of the references teach a film containing water. The Examiner states that it would have been obvious to one skilled in the art to determine the optimum method of providing water, but the Examiner provided no evidence of this. Bentley teaches a layer of a corrosion resistant polymer, such as polypropylene, that is laminated to a heat exchanger, but does not does not teach that the layer of a corrosion resistant polymer contains any moisture. Audett only suggests curing the adhesive in a water bath. The Prejean publication does not teach any method of adding water. Thus, none of the references alone teach the step of curing a layer of ethylene terpolymer with water contained in a film to cross-link the organosilicone functional

groups, and therefore the combination of the references does not teach, suggest or disclose the claimed invention.

The references do not disclose, suggest, or teach the claimed features. Thus, the rejection under 35 U.S.C. 103 is improper and must be withdrawn.

D. Claim 6

Claim 6 stands finally rejected under 35 U.S.C. 103(a) as being unpatentable over Bentley as modified with either Audett or the Prejean publication. For the reasons set forth above in Section A, Audett and the Prejean publication are non-analogous art and there is no suggestion or motivation to modify Bentley with the teachings of Audett and the Prejean publication.

Claim 6 includes the step of curing the layer of ethylene terpolymer with water applied on the heat transfer component to cross-link the organosilicone functional groups. None of the references teach the step of applying water to a heat transfer component. The Examiner states that it would have been obvious to one skilled in the art to determine the optimum method of providing water, but the Examiner provided no evidence of this. Bentley teaches a layer of a corrosion resistant polymer, such as polypropylene, that is laminated to a heat exchanger, but does not does not teach that the layer of a corrosion resistant polymer contains any moisture. Audett only suggests curing the adhesive in a water bath. The Prejean publication does not teach any method of adding water. Thus, none of the references alone teach the step of curing a layer of ethylene terpolymer with water applying water to a heat transfer component to cross-link the organosilicone functional groups, and therefore the combination of the references does not teach, suggest or disclose the claimed invention.

The references do not disclose, suggest, or teach the claimed features. Thus, the rejection under 35 U.S.C. 103 is improper and must be withdrawn.

E. Claim 12

Claim 12 stands finally rejected under 35 U.S.C. 103(a) as being unpatentable over Bentley as modified with either Audett or the Prejean publication. For the reasons set forth above in Section A, Audett and the Prejean publication are non-analogous art and there is no suggestion or motivation to

modify Bentley with the teachings of Audett and the Prejean publication.

Claim 12 includes the step of curing the layer of ethylene terpolymer with water contained in steam directed on the layer of ethylene terpolymer to cross-link the organosilicone functional groups.

None of the references teach directing the step of directing steam on a layer of ethylene terpolymer. The Examiner states that it would have been obvious to one skilled in the art to determine the optimum method of providing water, but the Examiner provided no evidence of this. Bentley teaches a layer of a corrosion resistant polymer, such as polypropylene, that is laminated to a heat exchanger, but does not does not teach that the layer of a corrosion resistant polymer contains any moisture. Audett only suggests curing the adhesive in a water bath. The Prejean publication does not teach any method of adding water. Thus, none of the references alone teach the step of directing steam on a layer of ethylene terpolymer to cross-link the organosilicone functional groups, and therefore the combination of the references does not teach, suggest or disclose the claimed invention.

The references do not disclose, suggest, or teach the claimed features. Thus, the rejection under 35 U.S.C. 103 is improper and must be withdrawn.

F. Claim 8

Claim 8 stands finally rejected under 35 U.S.C. 103(a) as being unpatentable over Bentley as modified with either Audett or the Prejean publication. For the reasons set forth above in Section A, Audett and the Prejean publication are non-analogous art and there is no suggestion or motivation to modify Bentley with the teachings of Audett and the Prejean publication.

Claim 8 recites that the film is polar. None of the references teach a polar film. The Examiner states that it is well known and conventional in the art to subject a polypropylene film to a surface treatment to provide polar groups, but the Examiner provided no evidence of this. Bentley teaches a layer of a corrosion resistant polymer, such as polypropylene, that is laminated to a heat exchanger. However, Bentley does not disclose, suggest or teach that the layer of polypropylene is polar. Audett and the Prejean publication also do not teach a polar film. Thus, none of the references alone teach a polar film, and therefore the combination of the references does not teach, suggest or disclose the claimed invention.

The references do not disclose, suggest, or teach the claimed features. Thus, the rejection under 35 U.S.C. 103 is improper and must be withdrawn.

G. Claim 13

Claim 13 stands finally rejected under 35 U.S.C. 103(a) as being unpatentable over Bentley as modified with either Audett or the Prejean publication. For the reasons set forth above in Section A, Audett and the Prejean publication are non-analogous art and there is no suggestion or motivation to modify Bentley with the teachings of Audett and the Prejean publication.

Claim 13 recites that the layer of ethylene terpolymer has a thickness between .5 mils and 5 mils. The Examiner admits that none of the references teach a layer of ethylene terpolymer having a thickness between .5 mils and 5 mils. The Examiner states that it would be obvious to one skilled in the art to determine the optimal thickness to provide sufficient adhesion, but provided no evidence of this. None of the references teach a layer of ethylene terpolymer having a thickness between .5 mils and 5 mils, and therefore the combination of the references does not teach, suggest or disclose the claimed invention.

The references do not disclose, suggest, or teach the claimed features. Thus, the rejection under 35 U.S.C. 103 is improper and must be withdrawn.

G. Claim 14

Claim 14 stands finally rejected under 35 U.S.C. 103(a) as being unpatentable over Bentley as modified with either Audett or the Prejean publication. For the reasons set forth above in Section A, Audett and the Prejean publication are non-analogous art and there is no suggestion or motivation to modify Bentley with the teachings of Audett and the Prejean publication.

Claim 14 recites that the layer of ethylene terpolymer has a thickness between 1 mils and 3 mils. The Examiner admits that none of the references teach a layer of ethylene terpolymer having a thickness between 1 mils and 3 mils. The Examiner states that it would be obvious to one skilled in the art to determine the optimal thickness to provide sufficient adhesion, but provided no evidence of this. None of the references teach a layer of ethylene terpolymer having a thickness between 1 mils

and 3 mils, and therefore the combination of the references does not teach, suggest or disclose the claimed invention.

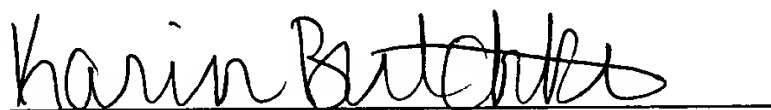
The references do not disclose, suggest, or teach the claimed features. Thus, the rejection under 35 U.S.C. 103 is improper and must be withdrawn.

CLOSING

For the reasons set forth above, the rejection of all claims is improper and should be reversed. Appellant respectfully requests such an action.

Respectfully Submitted,

CARLSON, GASKEY & OLDS, P.C.



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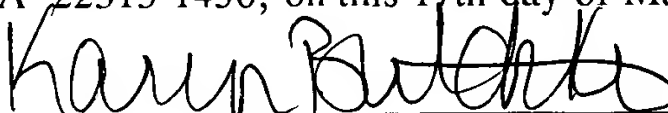
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Dated: May 17, 2004

CERTIFICATE OF MAIL

I hereby certify that the enclosed Appeal Brief is being deposited in triplicate with the United States Postal Service as First Class Mail, postage prepaid, in an envelope addressed to Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 17th day of May, 2004.



Karin H. Butchko

CLAIM APPENDIX

1. A method for adhering a film to a heat transfer component comprising the steps of:
applying a layer of ethylene terpolymer including an organosilicone functional group to the heat transfer component;
applying the film to said layer of ethylene terpolymer; and
curing said layer of ethylene terpolymer to adhere the film to the heat transfer component.
2. The method as recited in claim 1 wherein the step of applying said layer of ethylene terpolymer includes applying a rolling pressure.
3. The method as recited in claim 1 wherein the film is polypropylene.
4. The method as recited in claim 1 wherein the step of curing said layer of ethylene terpolymer includes adding water to said layer of ethylene terpolymer to cross-link said organosilicone functional groups.
5. The method as recited in claim 4 wherein said water is contained in the film.
6. The method as recited in claim 4 wherein said water is applied to said heat transfer component.
7. The method as recited in claim 4 wherein said water is applied to the film.
8. The method as recited in claim 1 wherein the film is polar.
9. The method as recited in claim 1 wherein the heat transfer component is a condensing heat exchanger.

10. A heat transfer component of a condensing furnace system comprising:
 - a metal surface;
 - a film adhered to said metal surface; and
 - a cured layer of ethylene terpolymer including an organosilicone functional group that adheres said film to said metal surface.
11. The heat transfer component as recited in claim 10 further including water, and wherein said layer of ethylene terpolymer is cured by said water to cross-link said organosilicone functional groups.
12. The method as recited in claim 4 wherein said water is contained in steam directed on said layer of ethylene terpolymer.
13. The method as recited in claim 1 wherein said layer of ethylene terpolymer has a thickness between .5 mils and 5 mils.
14. The method as recited in claim 1 wherein said layer of ethylene terpolymer has a thickness between 1 mil and 3 mils.